CLAIMS

1. A method for producing an alcohol and/or a ketone from at least one corresponding alkene by bringing a starting material containing the alkene(s), as a gas phase into contact with an oxide catalyst in the presence of water vapor to carry out the reaction, wherein

said oxide catalyst satisfies the following requirements:

- (a) it comprises an oxide(s) of molybdenum
 and/or tin, and
- (b) the amount of carbonaceous substances accumulated on said oxide catalyst is controlled to be within a range of 0.1 to 10% by mass, during said reaction.
- 2. A method according to claim 1, which comprises recovering the unreacted alkene(s) and the alcohol and/or ketone from a reaction mixture obtained by said reaction, and recycling the unreacted alkene(s) as a portion of the starting material.
- A method according to claim 1 or 2, wherein in carrying out said reaction by a fluidized bed reaction system, a catalyst recycling system is adopted which comprises taking out the oxide catalyst used in the reaction from a reactor, regenerating said oxide catalyst in the presence of an oxygen-containing gas, and returning the regenerated oxide catalyst to the reactor.

- 4. A method according to claim 3, wherein the amount of carbonaceous substances accumulated on the oxide catalyst to be returned to the reactor is controlled to be within a range of 0.1 to 10% by mass.
- 5. A method according to claim 3 or 4, wherein the temperature at the regeneration of the oxide catalyst in the presence of the oxygen-containing gas is 270 to 550°C.
- 6. A method according to any one of claims 3 to 5, wherein the mass ratio of the amount of the oxide catalyst returned to the reactor to the amount of the alkene(s) fed to the reactor ranges from 0.5 to 100.
- 7. A method according to any one of claims 1 to 6, wherein the amount of carbonaceous substances accumulated on the oxide catalyst is controlled to be within a range of 0.3 to 5% by mass.
- 8. A method according to any one of claims 1 to 7, wherein the atomic ratio X of molybdenum to the sum of tin and molybdenum in the oxide catalyst {Mo/(Sn + Mo); wherein Mo is the number of atoms of molybdenum in said oxide catalyst, and Sn is the number of atoms of tin in said oxide catalyst) is in a range excluding 0.29 and 0.51.
- 9. A method according to any one of claims 1 to 7, wherein the atomic ratio X of molybdenum to the sum of tin and molybdenum in the oxide catalyst {Mo/(Sn + Mo); wherein Mo is the number of atoms of molybdenum in said oxide catalyst, and Sn is the number of atoms of

tin in said oxide catalyst} is in a range of $0 \le X < 0.50$ (excluding 0.29).

- 10. A method according to any one of claims 1 to 7, wherein the atomic ratio X of molybdenum to the sum of tin and molybdenum in the oxide catalyst $\{Mo/(Sn + Mo)\}$; wherein Mo is the number of atoms of molybdenum in said oxide catalyst, and Sn is the number of atoms of tin in said oxide catalyst is in a range of $0.01 \le X \le 0.24$.
- 11. A method according to any one of claims 1 to 10, wherein the molar ratio of the amount of oxygen gas fed to the reactor to the amount of the alkene(s) fed to the reactor ranges from 0.0 to 0.5.
- 12. A method according to any one of claims 1 to 11, wherein the molar ratio of the amount of water vapor fed to the reactor to the amount of the alkene(s) fed to the reactor ranges from 0.05 to 10.0.
- 13. A method according to any one of claims 1 to 12, wherein the whole or a portion of recovered water after said reaction is reused in said reaction.
- 14. A method according to any one of claims 1 to 13, wherein the alkene(s) is 1-butene and/or 2-butene.
- 15. A method according to claim 14, wherein the starting material containing 1-butene and/or 2-butene as the alkene(s) contains at least one compound selected from the group consisting of isobutene, butadiene, tert-butyl alcohol and methyl tert-butyl ether.